



Chicago Zoological Society

Inspiring Conservation Leadership

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Arachnids...Did You Know?

- The word, arachnid, is derived from Greek mythology and the story of Arachne. Arachne was a gifted weaver who insulted the goddess Athena. Athena cursed Arachne. In despair, Arachne hanged herself. Not to be outdone, Athena brought Arachne back to life, transforming her into a spider and ever since Arachne hangs by and weaves her webs.
- Scientifically speaking, according to *Merriam-Webster*, arachnids are any of a class (*Arachnida*) of arthropods comprising chiefly of terrestrial invertebrates, including spiders, scorpions, mites, and ticks, and having a segmented body divided into two regions of which the anterior bears four pairs of legs but no antennae.
- Insects are different from arachnids. Insects are any of a class (*Insecta*) of arthropods with a well-defined head, thorax, and abdomen, has only three pairs of legs, antennae, and typically one or two pairs of wings (*Merriam-Webster*). Examples include beetles, flies, and grasshoppers.
- There are approximately 45,000 documented species of spiders in the world. Only a small fraction of these (less than 1 percent) are known to be deadly to humans. Spider venom is usually relatively harmless to humans. It has evolved to capture and kill small invertebrates—not big mammals (like humans).
- There are about 3,000 species of spiders in North America. Only two species, the *Loxosceles* (recluses) and *Latrodectus* (widows) are considered dangerous.
- Eleven species of recluse spiders are in North America; about 100 exist throughout the world. The highly venomous brown recluse is the most common and is found in the southern United States coast to coast. Many other species of recluse are found throughout Mexico, the United States, and Canada. The brown recluse has a dark violin shape on its back. In addition, while most spiders have eight eyes, the recluse spiders only have six, arranged in pairs—one pair in front and a pair on either side. The recluse spider's venom can cause significant tissue loss and necrosis. It can be deadly to humans. Generally, when encountered, it is not an aggressive species and only bites when threatened.
- Thirty-two widow species are found worldwide; five are found in North America. The most common species in North America is the black widow, located from Canada to Mexico and the West Indies. The female black widow is usually shiny black with a red hourglass marking on the underside of the abdomen. The bite from a black widow is painful and may be fatal. The neurotoxic venom attacks the nervous system. Effective antivenom was developed in 1956. Its use prevents deaths in all but 1 percent of black widow bite victims.

Arachnids in Film and Music

- The earliest mention of spiders in film is the 1933 movie, "King Kong." There was a scene filmed with sailors being shaken out of a tree by Kong and then being eaten by giant spiders. However, this scene was cut from the final movie.

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- “Tarantula” (1955) was the most famous spider movie. Other movies that arachnids were featured in are: “Dr. No” (1962), “Tarantulas: The Deadly Cargo” (1977), “Raiders of the Lost Arc” (1981), “Arachnophobia” (1990), “Home Alone” (1990), “Spiders” (2000), “Arachnid” (2001), “Eight Legged Freaks” (2002), “Lord of the Rings 3: The Return of the King” (2003), “Ice Spiders” (2007), and “Kong: Skull Island” (2017).
- One of the most famous scorpion movies is “The Scorpion King” (2002). Others include: “The Black Scorpion” (1957), “Stinger” (2005), “Deadly Stingers” (2003), “Tail Sting” (2001), and “Clash of the Titans” (2010).
- The “Itsy Bitsy Spider” is probably the most familiar spider song. It is found in publications as early as 1910 and has been recorded and sung ever since. The song is sung as the “Incy Wincy Spider” in some parts of the world and some cultures sing the “Blooming Bloody Spider.”
- Science has honored several musicians by naming a spider after them. They include:
 - Frank Zappa—(*Pachygatha zappa*) orb weaver found in Cameroon, Africa (1994)
 - Johnny Cash—(*Aphonopelma johnnycashi*) tarantula found in California (2016)
 - Buddy Holly—(*Aphonopelma hollyi*) Lubbock golden tarantula found in Texas (1995)
 - Brian Eno—(*Pseudocorinna brianeno*) small wandering spider (2011)
 - John Lennon—(*Bumba lennoni*) tarantula found in Brazil (2014)
 - Pink Floyd—(*Pinkfloydia harveii*) small spider found in Australia (2011)
 - Neil Young—(*Myrmekiaphila neilyoungi*), trapdoor spider found in Alabama (2007)
 - Bono—(*Aptostichus bonoi*) trapdoor spider found in California (2013)
 - Lou Reed—(*Loureedia annuillipes*) velvet spider found in Israel (2012)
 - Elvis Presley—(*Paradonea presleyi*) velvet spider (2012)

Arachnids in Science

- The venom from the Israeli deathstalker scorpion binds to cancer cells. By tying it to a fluorescent molecule, the venom acts like a flashlight. Doctors call this “tumor painting,” which has been used to identify brain, breast, colon, and skin cancer tumors.
- Scorpions have 17 amino acids and 14 trace elements that are essential to the human body. Hence, scorpions are nutritious foods. Long-term diets, including scorpion are believed to improve health.
- Arachnid venom could help increase the chances of heart transplants being successful.
- Yale and the University of Queensland in Australia have been studying spider venom to develop new painkiller medication. Yale is focusing its study on the Peruvian green velvet tarantula, the green blue bottle tarantula, and the Australian funnel-web spider. The toxins in the venoms block pain receptors. At Queensland, a university researcher gathered venom around the world from amateur arachnid enthusiasts. The researchers believe painkillers derived from spider toxins will not be addictive like commonly used opiate painkillers (like morphine and hydrocodone). Scorpion venom is also being used in painkiller medication research.
- The University of Buffalo began studying the Chilean rose hair tarantula whose venom contains a protein that could work as a treatment for muscular dystrophy. The protein in the venom slowed the progression of the disease. The drug derived from the venom’s protein remains stable in the patient’s body for a long period, which means infrequent doses that could hold down the cost of the medication. This research has led to other studies such as the prevention of cardiac failure.

Arachnids in Culture

- In Native American culture, the Spider Woman, from the Ojibwe, Hopi, and Navajo nations is very caring and looks out for children and others. She created dreamcatchers to filter out the bad dreams and only allow the good thoughts to enter the mind.
- In Jewish culture, there is a story of David being chased by King Saul. David hides in a cave. A spider spins a web over the opening of the cave and Saul and his men pass by it.

- In Islamic culture, oral tradition tells that during the Hijra, Muhammad and Abu Bakr were pursued by soldiers. They hid in a cave. Allah commanded a spider to spin a web across the opening concealing and protecting them from the soldiers.

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